



Florida Foundations of Computer Science: 4th Grade Course Syllabus

One Year for Elementary School, 36 Hours

Course Overview and Goals

The Florida Foundations of Computer Science: 4th Grade introduces students to foundational programming concepts through a block-based programming language. Students will develop computational thinking and problem-solving skills while learning to create interactive projects, animations, and games. This course emphasizes creativity and collaboration, providing students with a solid base in computer science concepts and digital literacy.

Learning Environment: This course is teacher-led and includes ready-to-use lessons following a consistent structure: Introduction, Guided Practice, Independent Practice, Extension, and Reflection. Instruction follows an “I do, we do, you do” model and incorporates spiral review to reinforce concepts and build confidence over time.

The course includes 36 lessons, each approximately 45 minutes long, providing a full year of instruction when taught once per week. While the course allows for instructional flexibility, some lessons are required to fully meet state computer science standards and are clearly identified within the syllabus. All Digital Literacy lessons are required to ensure full standards alignment, as they address essential non-programming computer science concepts. Required lessons are labeled with the specific standards they address to support planning and compliance.

Programming Environment: Students will write and run programs that are saved in students’ accounts. The environment supports interactive, hands-on programming, enabling students to create and debug projects in a user-friendly interface.

Prerequisites: There are no prerequisites for this course. It is designed to support all learners, regardless of prior computer science experience.

More Information: Browse the content of this course at https://codehs.com/course/FL_4/overview



A clickable PDF can be found at <https://codehs.com/FL-K-5Roadmaps>

Course Breakdown

Optional Review

These optional lessons help students log in to CodeHop and review key concepts—online positivity, computer science vocabulary, and the coordinate plane—before starting fourth grade content.

Objectives / Topics Covered	• Log in and navigate CodeHop • Spread positivity online • Define computer science vocabulary • Animate using the coordinate plane
Lessons	Welcome to CodeHop! • Log in and explore the CodeHop Playground. Internet Positivity • Create a code of conduct for spreading positivity online. Introduction to Computer Science • Define key computer science vocabulary and create a simple program. The Coordinate Plane • Create an open-ended animation using the coordinate plane.

Unit 1: Getting Started (2 lessons)

Students explore computing systems and apply computational thinking to a design challenge.

Objectives / Topics Covered	• Identify parts of a computing system • Identify hardware and software problems • Apply computational thinking to a design task
Lessons	Exploring Computing Systems (SC.4.CO.1.4, SC.4.CO.1.7, SC.4.CO.1.5) • Identify computing system parts and simple hardware and software problems. Computational Thinking: Design a School (SC.4.PE.3.1, SC.K12.CTR.7.1, SC.K12.CTR.4.1) • Use computational thinking to design a school.

Unit 2: Sequences and Events (8 lessons)

Students create algorithms and event-driven programs, collaborate through pair programming, and connect coding to careers, science, math, and culture.

Objectives / Topics Covered	• Program and compare algorithms • Collaborate with pair programming • Use broadcast messages and events • Connect coding to other subjects
Lessons	Creating Algorithms (SC.4.PE.3.2, SC.K12.CTR.4.1, SC.K12.CTR.5.1) • Program multiple algorithms and assess which best meets their needs. Pair Programming: Create a Band (2 classes SC.4.CC.1.1, SC.4.CC.1.2, SC.4.CC.1.4) • Collaborate through pair programming to code a band using keyboard inputs. Careers in CS: Health and Fitness (SC.4.PE.3.2, SC.4.TI.1.1, SC.4.CC.1.3) • Animate how technology can be used in health and fitness. Exploring the Water Cycle (SC.4.PE.3.2, SC.K12.CTR.5.1, SC.4.PE.3.1) • Use broadcast messages to explain the phases of the water cycle. Classifying Shapes Using Lines and Angles (SC.4.PE.3.2, SC.K12.CTR.5.1, MA.K12.MTR.1.1) • Program a tool to categorize shapes by lines and angles, documenting code with comments.

	Choose Your Own Path: Elements of Culture (2 classes SC.4.CC.1.4, SC.4.PE.3.2, SC.4.CO.1.2) Create a cultural choose-your-own-path game.
--	---

Unit 3: Loops (3 lessons)

Students use loops to build games, debug programs, and animate sprites with math.

Objectives / Topics Covered	- Use multiple types of loops - Debug programs by decomposing them - Apply loops and factors to animation
Lessons	Loops: Catch the Ball (SC.4.PE.3.2, SC.K12.CTR.5.1) - Use two types of loops to create a simple game. Debugging: Mazes - Decompose a program to debug and make it run as intended. Animating Sprites with Factors (SC.4.PE.3.2, SC.K12.CTR.5.1, MA.K12.MTR.1.1) - Use factors with loops and wait blocks to animate sprites.

Unit 4: Conditionals and Variables (6 lessons)

Students use conditionals and variables to build interactive programs, applying them to math, sound, and artificial intelligence.

Objectives / Topics Covered	- Create programs with if/then conditionals - Create and use variables - Apply conditionals and variables to math and science - Train and describe an AI chatbot
Lessons	Scout's Quest: Conditionals (SC.4.PE.1.2, SC.4.PE.3.2, SC.K12.CTR.5.1) - Create a program using if/then conditionals. Division and Conditionals (SC.4.PE.1.2, SC.4.PE.3.2, SC.K12.CTR.5.1) - Use conditionals to program an interactive division game. Scout's Quest: Variables (SC.4.PE.3.2, SC.K12.CTR.5.1) - Create and use variables to track points in a program. AI Chatbots (SC.4.PE.3.2, SC.4.TI.1.3, SC.4.CO.1.2) - Train a model chatbot and describe how AI supports reasoning. Sound Frequency & Amplitude (SC.4.PE.3.2, SC.K12.CTR.5.1, SC.4.PE.3.1) - Use variables to control a speaker sprite's volume and vibration. Multiplying Fractions by Whole Numbers (SC.4.PE.1.2, SC.4.PE.3.2, SC.K12.CTR.2.1) - Create an interactive activity for multiplying fractions by whole numbers.

Unit 5: Clones and Functions (4 lessons)

Students use clones and functions—including boolean and number inputs—to build efficient programs and apply them to math.

Objectives / Topics Covered	- Create animations using clones - Investigate program limitations - Create functions with boolean and number inputs - Apply functions to area and perimeter
Lessons	Introduction to Clones (SC.4.PE.1.2, SC.4.PE.3.2, SC.K12.CTR.5.1) - Create an animation using clones and investigate its limitations. Scout's Quest: Functions with Boolean Inputs (SC.4.PE.3.2, SC.K12.CTR.5.1) - Create a function with a boolean input to check whether a password is correct.

	House Design with Area and Perimeter (2 classes SC.4.PE.3.2, SC.K12.CTR.1.1, SC.K12.CTR.2.1) Use functions to design a house based on area and perimeter.
--	--

Unit 6: Culmination Projects (4 lessons)

Students combine conditionals, variables, booleans, and events to build a game and redesign one for accessibility.

Objectives / Topics Covered	- Combine conditionals, variables, booleans, and events - Build an interactive game - Apply the design thinking process - Improve accessibility and usability
Lessons	Click-a-Mole (2 classes SC.4.PE.3.2, SC.K12.CTR.1.1, SC.K12.CTR.5.1) - Create a Whack-a-Mole style game using conditionals, variables, booleans, and events. Designing Solutions for Accessibility (2 classes SC.4.CC.1.2, SC.4.CC.1.3, SC.4.CC.1.4) - Use the design thinking process to redesign a game for accessibility.

Unit 7: Digital Literacy (9 lessons)

Students build keyboarding, cyberbullying awareness, cybersecurity, networking, research, and AI-ethics skills.

Objectives / Topics Covered	- Type with proper finger placement - Recognize cyberbullying and be an upstander - Explain networks and internet packets - Evaluate AI and cite sources
Lessons	Developing Keyboarding Skills (SC.4.CO.1.1, SC.K12.CTR.3.1) - Use proper finger placement to type paragraphs. Our Words Have Power (Cyberbullying) (SC.4.HS.1.4, SC.4.HS.1.3, SC.4.HS.2.1) - Explain cyberbullying, its effects, and how to be an upstander. Managing Digital Footprints (SC.4.HS.1.3) - Explain how actions online create permanent digital footprints. Scout's Cybersecurity Adventure: Part 2 (SC.K12.CTR.3.1, SC.4.HS.1.1, SC.4.HS.1.2) - Practice secure habits and tools that protect their information. Networks, Packets, and the Internet (SC.4.CO.1.6, SC.4.CC.1.5) - Model how messages travel the internet as packets and are reassembled. Give Credit When You Use It (SC.4.CC.2.1, SC.4.CC.2.2, SC.4.CO.1.2) - Search online and provide proper attribution to sources. Inquiry Project: Data Bar Graph (2 classes SC.4.PE.2.1, SC.4.PE.2.2, SC.K12.CTR.6.1) - Follow the inquiry process and program a display of investigation results. Humans Vs. Machines (SC.4.TI.1.1, SC.4.TI.1.4, SC.4.TI.1.3) - Compare human and computer performance and describe computer perception. Ethical and Responsible Use of Generative AI (SC.4.TI.1.3, SC.4.TI.1.1, SC.4.TI.1.2) - Describe the pros and cons of generative AI and build a class code of conduct.

Interdisciplinary Connections (Supplemental)

These optional lessons apply computer science to math, science, and social studies using conditionals, variables, events, and lists.

Objectives / Topics Covered	- Apply programming across subject areas - Model math with conditionals and variables - Model science concepts - Use events, lists, and operators in context
-----------------------------	---

Lessons	Multi-digit Multiplication and Conditionals (SC.4.PE.1.2, SC.4.PE.3.2, SC.K12.CTR.2.1) - Use if/then conditionals to review multi-digit multiplication. Naming Numbers Game (SC.4.PE.1.2, SC.4.PE.3.2, SC.K12.CTR.5.1) - Use variables and operators to read and write numbers in number and expanded form. Exploring Heat (SC.4.PE.3.2, SC.K12.CTR.5.1, SC.4.PE.3.1) - Use events to communicate how the sun's heat affects objects on Earth. Sensing and Responding to the Environment (SC.4.PE.3.2, SC.K12.CTR.5.1, SC.4.PE.3.1) - Model how animals use their senses to respond to their environment. Plant and Animal Cells (SC.4.PE.3.2, SC.K12.CTR.2.1, SC.4.PE.3.1) - Use broadcast events to build an interactive program about plant and animal cells. How We See: Light Reflection (SC.4.PE.1.2, SC.4.PE.3.2, SC.4.PE.3.1) - Use conditionals to demonstrate how light reflects into the eye. Wave Generator (SC.4.PE.3.2, SC.K12.CTR.5.1, SC.4.PE.3.1) - Use variables and loops to draw a variety of wave patterns. Grammar Quiz Game (SC.4.PE.1.2, SC.4.PE.3.2, SC.K12.CTR.2.1) - Use conditionals to build a quiz testing English grammar usage. Mad Libs Project (2 classes SC.4.PE.3.2, SC.K12.CTR.1.1, SC.K12.CTR.2.1) - Use lists to create a Mad Libs game. Rights and Responsibilities - Use variables and events to build a voting program about citizens' rights and responsibilities.
---------	---

Florida Foundations of Computer Science: 4th Grade Supplemental Materials

Resources	Description
Parent Welcome Letter (Spanish)	Send this letter home to introduce families to their new computer science curriculum.
Warm-Up Activities	This warm-up activity slide deck provides 5-10 minute problems aligned with computer science skills to engage students at the start of class, allowing teachers to preview or review concepts with answer keys and discussion tips included in the Speaker Notes.
Program Self-Assessment (Spanish)	This is a student self-assessment tool designed to help K-6 learners reflect on their programming projects, evaluate their skills in algorithms, debugging, collaboration, and reflection, and set goals for improvement.
Peer Review Resources (Spanish)	This provides structured worksheets to facilitate student feedback during collaborative coding projects. It encourages reflection by guiding students to highlight successes, ask questions, and offer constructive feedback on their partner's work.
Lesson Reflection & Computational Thinking (Spanish)	This guides students in engaging with computational thinking concepts, preparing for discussions, reflecting on lessons, and applying their learning to real-world problem-solving.
Design-Your-Own-Lesson Templates	Empower your students to explore and express their knowledge creatively with our versatile graphic organizer templates. Designed with adaptability and ease of use in mind, these interactive tools transform any subject into an engaging, hands-on learning experience.
These resources and more are found on the CodeHop Resources Page .	